

# METHOD FOR DETERMINING THE DEPTH FROM A SINGLE IMAGE

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Method for estimating depth, optical flow, and other semantic information on low-power devices. Specifically, low-resolution images acquired from a single camera are processed by a lightweight and highly accurate self-supervised Convolutional Neural Network.

**Protection:** International (PCT)

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## INVENTION

Estimating the depth and the optical flow from a scene is crucial in several computer vision applications. A recent trend aims to infer such cues from a single camera to simplify the setup and allow their use in application contexts characterized by severe cost and size constraints.

The invention consists of a tiny Convolutional Neural Network capable of processing low-resolution images to obtain coarse semantic information of the observed scene. The network can run on off-the-shelf microcontroller units with minimal power requirements (a few hundreds of mW). Moreover, the network is trained in a self-supervised manner; thus, it does not require costly ground-truth annotations during the training phase.

## ADVANTAGES

- Extraction of dense semantic information from a single image
- Trained with self-supervised learning
- Compatible with mobile battery-powered devices
- Low cost

## APPLICATIONS

- Proximity control systems
- Tracking systems
- Traffic monitoring systems
- Privacy-preserving monitoring systems
- Augmented and Virtual Reality

## CONTACTS

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